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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/507,605	02/21/2000	Wen-Ching Yang	RDM98002	1861

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EXAMINER
LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
1764	4

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/507,605	YANG ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Applicant's Amendment filed on January 27, 2003 has been received and carefully considered. The submitted changes to the Specification and Drawings are acceptable. Claim 11 has been cancelled. Claims 1-10 and 12-20 remain active.

Claim Objections

2. Claim 12 is objected to because, -- and/or solids -- should be inserted after "the central gas" for consistency in claim terminology. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-10 and 12-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, "a desired product" (line 2) is considered vague and indefinite, as it is unclear as to what product applicants consider desirable. Furthermore, it is unclear as to the structural limitation the applicants are attempting to recite by, "without passing through a solid or perforated diffuser section" (lines 9-10), since it is unclear as to the structural relationship of the "solid or perforated diffuser section" to the other elements of the apparatus.

With respect to claim 3, the phrase "can be" (line 4) is considered vague and indefinite, since whether "residue can be extracted" does not constitute a positive structural limitation.

With respect to claim 7, it is unclear as to the structural limitation the applicants are attempting to recite by, "a sparger surrounding at least a portion of the residue collection housing for introducing gas within the residue collection housing," (lines 1-3), since it is unclear as to what structural elements enable the sparger, positioned outside of the housing, to introduce gas within the housing, and where it is disclosed in the specification and drawings.

With respect to claim 12, it is unclear as to the structural limitation the applicants are attempting to recite by, "the central gas inlet, the plurality of peripheral gas inlet jets and sparger are structurally formed so that approximately...", since it is unclear as to what structural elements enable the recited structures to establish the given fluidizing gas percentages, and where it is disclosed in the specification and drawings. Likewise, it is unclear as to what structural elements enable "the plurality of peripheral gas inlet jets" and "the sparger" recited in claims 19 and 20, respectively, to establish the given pressure drop percentages, and where it is disclosed in the specification and drawings.

With respect to claim 13, it is unclear as to the structural limitation applicants are attempting to recite by, "in fluid communication with a fluidizing gas supply and respective ones or groups of the plurality of peripheral gas inlet jets".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. 3,981,690).

With respect to claim 1, Chen et al. (FIG. 1, 2, 3; generally, column 3, lines 3-63) disclose a fluidized bed reactor comprising:

– A hollow, elongated, vertically oriented reactor housing **10** for confining a reaction, wherein the portion of the reactor housing confining the reaction defines a reaction zone (i.e. combustion zone **14**);

– A central gas inlet **16** proximate the bottom of the reaction zone **14** within the housing **10** for directing gas in an upward direction along the vertical axis of the housing into the reaction zone **14** without passing through a solid or perforated diffuser section; and

– A plurality of peripheral gas inlet jets **26** positioned at at least two elevations (FIG. 2; column 3, lines 23-27) along the elongated dimension of the housing **10** for introducing gas at an angle to the elongated dimension of the housing.

With respect to claim 2, Chen et al. disclose housing **10** has a conical section (defined by slightly inclined refractory surface **20**) circumscribing the reaction zone **14** with the reduced diameter of the conical section at its lower end interfacing with the gas inlet **16** (see FIG. 1, 2).

With respect to claim 13, Chen et al. further (FIG. 1, 2; column 4, lines 31-60) disclose control valves (illustrated as ⊗ or "**V**") in fluid communication with a fluidizing gas supply (i.e. steam introduced via line **22**) and respective groups of the plurality of peripheral gas inlet jets **26** for controlling the quantity of gas passing through the respective plurality of peripheral gas inlet jets **26** (i.e. introduced via branch pipe **25** and circular pipe **24**).

With respect to claim 14, Chen et al. disclose the plurality of peripheral gas inlet jets **26** includes a plurality of gas jets at each of said elevations respectively positioned around the circumference of the reactor housing **10** (see FIG. 2, 3).

With respect to claim 15, Chen et al. disclose by illustration the plurality of peripheral gas inlet jets **26** at each elevation are equidistantly positioned around the circumference of the reactor housing **10** (see FIG. 2, 3).

Instant claims 1, 2 and 13-15 structurally read on the apparatus of Chen et al.

5. Claims 1-3, 7-9, 14-15 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Uemura et al. (U.S. 4,308,806).

With respect to claim 1, Uemura et al. (FIG. 1, 2, 3; column 4, lines 14-53) disclose a fluidized bed reactor comprising:

– A hollow, elongated, vertically oriented reactor housing **12** for confining a reaction, the portion of the reactor housing confining the reaction defining a reaction zone **34**;

– A central gas inlet **19** proximate the bottom of the reaction zone **34** within the housing for directing gas in an upward direction along the vertical axis of the housing into the reaction zone without passing through a solid or perforated diffuser section; and

– A plurality of peripheral gas inlet jets **16** positioned at at least two elevations along the elongated dimension of the housing for introducing gas at an angle to the elongated dimension.

With respect to claim 2, Uemura et al. (FIG. 2; column 4, lines 19-25, 29-36) further disclose the reactor housing has a conical section **14** circumscribing the reaction zone with the reduced diameter of the conical section at its lower end interfacing with the gas inlet **19**.

With respect to claim 3, Uemura et al. (FIG. 2; column 4, lines 29-40) further disclose a residue collection housing (defined by pipe **24**) mating at one end with the conical section **14** of the reactor housing and having an inclined lower wall (defined by pipe **25**) for directing a reaction process residue from the conical section **14** to a residue collection port.

With respect to claim 7, Uemura et al. (FIG. 2; column 4, line 36-40) further disclose a sparger (comprising pressurized air chamber **26** and nozzles **27**) surrounding at least a portion of the residue collection housing **24**.

With respect to claim 8, Uemura et al. further disclose the sparger gas is introduced at a downwardly directed angle to the central axis of the collection housing (i.e. refer to illustration of downwardly sloping nozzles **27** in FIG. 2).

With respect to claim 9, the incline of the lower wall (defined by pipe **25**) of the residue collection housing (defined by pipe **24**) in the apparatus of Uemura et al. would inherently be designed such that the gravitational forces on the residue above the given size overcome the wall friction, in order to enable the travel of residue to the collection port (FIG. 2).

With respect to claim 14, Uemura et al. (FIG. 2, 3; column 4, lines 25-27) further disclose the plurality of peripheral gas inlet jets **16** includes a plurality of gas jets at each of said elevations respectively positioned around the circumference of the reactor housing.

With respect to claim 15, Uemura et al. (FIG. 2, 3; column 4, lines 25-27) further disclose by illustration the plurality of peripheral gas inlet jets **16** at each elevation are equidistantly positioned around the circumference of the reactor housing.

With respect to claim 18, Uemura et al. (FIG. 2, 3) further disclose the plurality of peripheral gas inlet jets **16** positioned at at least three elevations (i.e. 6 elevations are illustrated).

Instant claims 1-3, 7-9, 14-15 and 18 structurally read on the apparatus of Uemura et al.

6. Claims 1-3 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishi et al. (JP 57-070189).

With respect to claim 1, Nishi et al. disclose a "Prior Art" fluidized bed reactor (FIG. 2,

Abstract) comprising:

– A hollow, elongated, vertically oriented reactor housing **010** for confining a reaction, the portion of the reactor housing confining the reaction defining a reaction zone;

– A central gas and/or solids inlet **07** proximate the bottom of the reaction zone within the housing for directing gas and/or solids in an upward direction along the vertical axis of housing into the reaction zone without passing through a solid or perforated diffuser section; and

– A plurality of peripheral gas inlet jets **06** positioned at at least two elevations along the elongated dimension of the housing for introducing gas at an angle to the elongated dimension.

With respect to claim 2, Nishi et al. (FIG. 2, Abstract) further disclose housing **010** has a conical section circumscribing the reaction zone (defined by dispersing plate **1**) with the reduced diameter of the conical section at its lower end interfacing with the gas and/or solids inlet **07**.

With respect to claim 3, Nishi et al. (FIG. 2, Abstract) a residue collection housing mating at one end with the conical section **01** of the reactor housing **010** and having an inclined lower wall **03** for directing a reaction process residue from the conical section to a residue collection port **02** through which the residue can be extracted from the fluidized bed reactor.

With respect to claim 18, Nishi et al. (FIG. 2, Abstract) further disclose the plurality of peripheral gas inlet jets **06** are positioned at at least three elevations.

Instant claims 1-3 and 18 structurally read on the apparatus of Nishi et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claim 4-6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (JP 57-070189) in view of Bogner et al. (EP 0 150 091).

With respect to claims 4 and 5, Nishi et al. are silent as to a feeder positioned at the residue collection port for removing residue from the collection housing. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to provide a feeder to the apparatus of Nishi et al., since the use of feeders for conveying material to and from a reactor is conventionally known in the art, as evidenced by Bogner et al. In particular, Bogner et al. teach a rotary or "starwheel feeder **21, 121**" positioned at the residue collection port **20, 120** of fluidized bed reactor **10, 110** for removing residue from the collection housing (defining ash annulus **14, 114**). Provision of the feeder allows the level of residue within the annulus of collection housing to be controlled. (page 6, lines 8-16; page 7, line 21-page 8, line 20; page 9, lines 13-15; FIG. 1, 2).

With respect to claims 6 and 17, Bogner et al. (page 8, lines 1-11) further teach that the feeder may be operated under "steady-state operation" or, during periods of turn-up or turn-down, the withdrawal rate of the feeder may be increased or decreased. Inherently, the feeder would be capable of operating in either a "continuous" or "batch mode" based on adjustments made to the feeder withdrawal rate. Therefore, it would have been obvious for one of ordinary skill in the at the time the invention was made to operate the feeder in the modified apparatus of Nishi et al., such that the feeder removes residue from the reactor continuously or in batches, on

the basis of suitability for the intended use (i.e. for establishing a given residue level within the collection housing) and absent showing any unexpected results thereof, and furthermore, it has been held that it is within the level of ordinary skill to operate a process continuously. *In re Dilnot* 138 USPQ 248 (CCPA 1963); *In re Korpi* 73 USPQ 229 (CCPA 1947); *In re Lincoln* 53 USPQ 40 (CCPA 1942). Likewise, it has been held that it is within the level of ordinary engineering skill to convert a process from continuous to batch. *In re Dilnot* 138 USPQ 248 (CCPA 1963).

8. Claims 7, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (JP 57-070189) in view of Miller, Jr. et al. (U.S. 3,772,999).

With respect to claim 7, Nishi et al. (FIG. 2, Abstract) further disclose an auxiliary gasifying agent supplying pipe **8** for introducing gas within the residue collection housing to maintain reaction process residue below a given size (i.e. dust, ash) in suspension and directed back into the conical section **01** while enabling agglomerates of reaction process residue above a given size (i.e. agglomerated ash) to drop towards the collection port **02**. The supplying pipe **8** of Nishi et al. structurally meets the claim of a "sparger", since a sparger is merely defined as a means for introducing air or gas. (*The American Heritage® Dictionary of the English Language, Fourth Edition. Copyright © 2000 by Houghton Mifflin Company*). Although Nishi et al. are silent as to whether the supplying pipe **8** may surround at least a portion of the residue collection housing, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to configure the supplying pipe of Nishi et al. to surround the residue collection housing, on the basis of suitability for the intended use and absent showing unexpected results thereof, since such a sparger configuration would provide an even distribution

of fluidization gas and is further conventionally known in the art, as evidenced by Miller, Jr. et al. In particular, Miller, Jr. et al. teach a fluidized bed reactor comprising a residue collection housing (defined by outlet pipe **20**) and a sparger (comprising circular chambers **51**, **62**, which introduce fluidizing gas into the reactor via slots **62**, **63**) surrounding at least a portion of the residue collection housing (column 2, lines 53-63; FIG. 1, 2).

With respect to claim 9, (FIG. 2, Abstract) the incline of the lower wall **03** of the residue collection housing of Nishi et al. is inherently designed so that the gravitational forces on the residue above the given size (i.e. ash which is softened and fused by high temperature to form an agglomerate) will overcome the wall friction and travel to the collection port **02**, in order to enable discharge of residue from the reactor.

With respect to claim 12, although the collective teachings of Nishi et al. and Miller, Jr. et al. are silent as to whether the central gas inlet **07**, the plurality of peripheral inlet jets **06** and the sparger may be configured such that approximately 30% of a fluidizing gas is introduced through the central gas and/or solids inlet, approximately 65% of the fluidizing gas is introduced through the plurality of peripheral gas inlet jets, and 5% of the fluidizing gas is introduced through the sparger, the modified apparatus of Nishi et al. structurally meets the claim since the recited elements are fully capable of delivering a given percentage of fluidizing gas to the reactor. Furthermore, the specific percentage of fluidizing gas is not considered to confer patentability to the claim since the precise percentage would have been considered a result effective variable by one having ordinary skill in the art. Also, it is noted that the present specification sets forth on page 3, lines 1-7, that the claimed ratio, is at best, a preferred limitation. As such, without more, the claimed ratio cannot be considered "critical".

Accordingly, one having ordinary skill in the art would have routinely optimized the amount of fluidizing gas in the system to obtain the desired fluidization behavior. *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

9. Claims 8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (JP 57-070189) in view of Miller, Jr. et al. (U.S. 3,772,999), as applied to claim 7 above, and further in view of Worley et al. (U.S. 4,198,210).

With respect to claim 8, the collective teachings of Nishi et al. and Miller, Jr. et al. are silent as to whether the sparger gas may be introduced at a downwardly directed angle to the central axis of the collection housing. Worley et al. teach a fluidized bed gasifier **10** comprising a distributor **20** (substantially a "sparger"), structured such that the sparger gas may be introduced at a downwardly directed angle (column 2, lines 60-63; column 3, lines 34-39). It would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to modify the sparger in the modified apparatus of Nishi et al. such that gas may be introduced at a downwardly directed angle, since such a configuration achieves good gas distribution and also reduces the possibility of any solids flowing back into the gas distributor pipes when the fluidizing gas flow ceases or is shut off, as taught by Worley et al.

With respect to claim 20, although the collective teachings of Nishi et al. and Miller, Jr. et al. are silent as to whether the sparger may be configured so that the pressure drop across the sparger is at least 30% of the pressure drop across the reaction zone, the modified apparatus of Nishi et al. meets the claim since the sparger is inherently capable of establishing a given

pressure drop (for instance, by varying the velocity of the fluidization gas, as evidenced by Worley et al). In particular, Worley et al. teach that in the prior art, "it is important... for the fluidizing gases entering the bed to have a relatively high pressure drop in order to achieve good distribution to and fluidization of the bed," and a high velocity of fluidizing gas introduced through a distributor may be provided to generate the high pressure drop (column 1, lines 16-32). The specific percentage of pressure drop is not considered to confer patentability to the claim since the precise percentage would have been considered a result effective variable by one having ordinary skill in the art. Accordingly, one having ordinary skill in the art would have routinely optimized the pressure drop across the sparger in the system to obtain the desired fluidization behavior, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (JP 57-070189), as applied to claim 1 above, and further in view of Haldipur (U.S. 4,569,681).

With respect to claim 10, Nishi et al. (FIG. 2) are silent as to whether the plurality of peripheral gas inlet jets **06** may be directed at a downward angle to a line perpendicular to the central axis of the reactor housing **010**. Haldipur (FIG. 3, 4, 5; column 4, lines 3-15) teaches a fluidized bed gasifier, wherein a plurality of peripheral gas inlet jets **38** are provided at a downward angle to a line perpendicular to the central axis of the reactor housing **12**. It would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to modify the inlet jets in the apparatus of Nishi et al. such that they were directed at a downward angle, since such a configuration enables the gas, and hence the ash and char

particles, to be directed towards the top of nozzle **14** (substantially the central gas and/or solids inlet pipe **07** of Nishi et al.) and further causes a sweeping action of the transition section **26** (substantially the conical reaction zone **01** of Nishi et al.), as taught by Haldipur.

11. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (JP 57-070189), as applied to claim 1 above, and further in view of Chen et al. (U.S. 3,981,690).

With respect to claim 13, although Nishi et al. is silent as to whether control valves may be provided for the group of peripheral gas inlet jets to control the quantity of gas passing through the respective plurality of peripheral gas inlet jets, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide such to the apparatus of Nishi et al. since the Examiner takes Official Notice that the provision of control means, such as control valves, for regulating process conditions is conventionally known in the art. Furthermore, Chen et al. is provided to illustrate the conventionality of providing control valves for regulating gas flow to a fluidized bed reactor (see comments made with respect to Chen et al. in claim 13 above).

With respect to claims 14, 15 and 16, Nishi et al. illustrate a plurality of gas jets **06** for each elevation but are silent as to illustrating the positioning of the plurality of gas jets around the reactor housing, such as equidistantly around the circumference of the housing or in a manner such that the jets at each elevation are not aligned with the jets at the other elevation (i.e. "staggered"). In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate positioning for the plurality of gas jets in the apparatus of Nishi et al., on the basis of suitability for the intended use (i.e. for establishing consistent fluidization) and absent showing any unexpected results thereof, since

such jet configurations are conventionally known in the art, as evidenced by Chen et al. (see comments made with respect to Chen et al. in claims 14 and 15 above). Although a "staggered" positioning is not shown, it would have been an obvious design choice for one of ordinary skill in the art to select such an arrangement to evenly distribute the fluidization gas, since shifting location of parts was held to have been obvious. *In re Japikse,* 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (JP 57-070189), as applied to claim 1 above, and further in view of Worley et al. (U.S. 4,198,210).

With respect to claim 19, although Nishi et al. are silent as to whether the plurality of peripheral gas inlet jets **06** may be structurally formed so that the pressure drop across the inlet jets is at least 30% of the pressure drop across the reaction zone, the apparatus of Nishi et al. meets the claim since the inlet jets are inherently capable of establishing a given pressure drop (see comments made with respect to Worley et al. in claim 20 above). Furthermore, the specific percentage of pressure drop is not considered to confer patentability to the claim since the precise percentage would have been considered a result effective variable by one having ordinary skill in the art. Accordingly, one having ordinary skill in the art would have routinely optimized the pressure drop across the plurality of peripheral inlet jets in the system to obtain the desired fluidization behavior, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

13. Applicant's arguments with respect to claims 1-10 and 12-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Adams, Cherish et al. and Yang et al. are provided to illustrate the state of the art.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer A. Leung
April 3, 2003 JAL

Hien Tran

HIEN TRAN
PRIMARY EXAMINER